

Site Specific Sampling Plan

Avery Landing Site
Avery, Idaho

for

**U.S. Environmental Protection Agency on Behalf
of Potlatch Land and Lumber**

March 4, 2013



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Site Specific Sampling Plan

Avery Landing Site Avery, Idaho

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March 4, 2013

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1.0 INTRODUCTION

This document presents a Site Specific Sampling Plan (SSSP) for the environmental sampling activities to be completed as part of the Avery Landing Site (Site) removal action. The Site is located approximately one mile west of Avery, Idaho (Figure B-1). This SSSP is to be used in conjunction with the Site Quality Assurance Project Plan (QAPP) which is presented in Appendix C of the Avery Landing Removal Action Work Plan (Work Plan; GeoEngineers, 2013). The information contained in this SSSP is based on information available at the time of preparation. This SSSP may be updated as additional information becomes available.

The SSSP and associated QAPP were prepared in general accordance with the requirements of 40 CFR 300.415(b)(4)(ii), EPA's Requirements for Quality Assurance Project Plans (EPA, 2001) and EPA's Guidance for Quality Assurance Project Plans (EPA, 2002).

2.0 PROJECT MANAGEMENT AND ORGANIZATION

The project management and organization elements of the SSSP, as detailed below, address the basic area of project management including the project history, team objectives, roles and responsibilities of the participants. This element of the plan ensures that the project has a defined goal, and that all participants understand this goal and that the planning outputs have been documented.

2.1. Personnel and Roles Involved in the Project

Key individuals and positions providing quality assurance (QA) and quality control (QC), including a description of the responsibilities, lines of authority and communication for the key individuals and positions providing QA and QC, is presented in the QAPP (Appendix C of the Work Plan).

2.2. Physical Description and Site Contact Information

Site Name	Avery Landing Site
Site Location	The Site is located approximately one mile west of Avery, Idaho, on the north side of the St. Joe River. The Site is located in the NW quarter of Section 16, Township 45 North, Range 5 East, Willamette Meridian, and is located at latitude 47° 13' 57" North and longitude is 115° 43' 40" West.
Property Size	Approximately 6 acres
Site Regulatory Contact	Earl Liverman, EPA On-Scene Coordinator
Nearest Residents	The eastern portion of the Site includes the Bentsik property, a seasonally occupied residence.
Primary Land Uses Surrounding the Site	North: Highway 50 ("St. Joe River Road"), owned by the Federal Highway Administration (FHWA). South: St. Joe River (rural/recreational) East: Rural/recreational West: Rural/recreational

2.3. Schedule of Work

Removal action activities being performed by Potlatch Land and Lumber (Potlatch) will be completed summer/fall of 2013. Post-removal action groundwater monitoring will be completed following completion of the removal action as approved by EPA. A schedule for mobilization/demobilization, removal action activities and reporting are presented in the Work Plan.

2.4. Historical and Background Information

Detailed information regarding Site and operational history, previous investigations and regulatory history and cleanup actions are presented in EPA's EE/CA (E&E, 2010) and/or Supplemental Investigation Report (GeoEngineers, 2011) and are summarized in the Work Plan.

2.5. Conceptual Site Model

Detailed information regarding the Conceptual Site Model is presented in EPA's EE/CA (E&E, 2010) and Supplemental Investigation Report (GeoEngineers, 2011). The nature and extent of contamination, sensitive species and environment, and cultural resources are summarized in the Work Plan.

2.6. Decision Statement

Decision Statements define the purpose and use of environmental data and serve as the basis for important decisions regarding key design features such as determining the end use of materials generated, response actions to be taken and/or the number and location of samples to be collected and the analyses to be performed.

2.6.1. Soil Excavation

2.6.1.1. OVERBURDEN SOIL

Decisions to be made during excavation of overburden soil are to:

- Confirm through field screening that overburden material meet the reuse criteria.
- Determine if the overburden soil used for backfill meets the compaction criteria following placement.

2.6.1.2. CONTAMINATED SOIL

Decisions to be made during excavation of contaminated soil are to:

- Determine if concentrations of contaminants in soil generated by the removal action meets landfill disposal criteria.

2.6.1.3. FINAL EXCAVATION LIMIT

Decisions to be made when the removal action is at the final excavation limit are to:

- Determine the vertical and lateral extent of petroleum contaminated soil within the removal action area.
- Determine the concentrations of petroleum hydrocarbons (TPH), VOCs, SVOCs, PCBs and metals in soil at the final excavation limit.

2.6.2. Imported Fill Material

Decisions to be made for imported fill material are to:

- Determine the concentrations of SVOCs, VOCs, PCBs and RCRA metals in imported fill.
- Determine the maximum dry density of imported fill material to confirm material is acceptable for placement.
- Determine if the imported fill material used for backfill meets the compaction criteria following placement.

2.6.3. Surface Water

- Determine surface water quality parameters to determine if the removal action is affecting surface water adjacent to the Site.

2.6.4. Water Treatment System

- Determine the effectiveness of the onsite treatment system in meeting surface water discharge criteria prior to discharging any water.
- Determine if treated water generated during removal action meet the surface water discharge criteria.
- Determine if the primary granular activated carbon (GAC) vessel in water treatment system are close to achieving breakthrough.
- Determine the chemical composition of product recovered by the water treatment system to determine the appropriate disposal facility.

2.6.5. Air

- Determine if dust/particulate generated by the removal action are being transported beyond the project boundary.

2.6.6. Groundwater

- Determine the concentrations of petroleum hydrocarbons (TPH), VOCs, SVOCs, PCBs and metals in groundwater following completion of the removal action monitor natural attenuation of Site contaminants.

2.7. Action Levels

Site action levels for the soil excavation, surface water monitoring, water treatment system monitoring, and air monitoring activities are presented in Table B-1. Water treatment system effluent discharge limits are presented in Table B-2. Import fill material criteria are presented in Table B-3.

3.0 DATA ACQUISITION AND MEASUREMENT OBJECTIVES

3.1. Site Diagram and Sampling Area

A Sampling Area is an area of the project in which a specific action will be performed to address the Decision Statements presented in Section 2.6. Figure B-1 shows the location of the Site and surrounding features. Figure B-2 shows the general Site layout, excavation areas and maximum expected limits of excavation based on the existing information, water treatment area and project boundary as well as upstream and downstream water quality sampling locations, and anticipated excavation limit sampling locations. The final excavation limits will be determined by EPA.

Sampling areas for the soil excavation and material generated by the soil excavation, imported fill material, water treatment system and associated product, air, surface water, and post-removal action groundwater are summarized in the following sections.

3.1.1. Soil Excavation

3.1.1.1. OVERBURDEN SOIL

Overburden soil overlying petroleum contaminated soil is a sampling area. This sampling area will be field screened for the presence of free-phase petroleum hydrocarbons, oil-staining, sheen exceeding field screening criteria, and field measured organic vapor during excavation. The approximate extent of the expected excavation limits is shown on Figure B-2. Based on the results of previous environmental investigations and experience gained by EPA as part of the 2012 removal action, the overburden/contaminated soil contact at the Site maybe as shallow as 2 feet below ground surface (bgs).

Commented [SH1]: They propose to use 20 ppm with a PID as a screening criteria. We didn't do this.

3.1.1.2. CONTAMINATED SOIL

Excavation activities to remove the underlying contaminated soil is a sampling area and will extend laterally until field screening evidence of petroleum contamination is no longer observed. Contaminated soil generated by the removal action will be stockpiled on Site and allowed to dewater until a representative sample from the stockpile passes a Paint Filter Liquids Test (PFLT; EPA Method 9095). If required by the receiving landfill, representative soil samples will be obtained from stockpiled contaminated soil for chemical analysis and may include SVOCs, VOCs, PCBs, TCLP and/or RCRA metals.

3.1.1.3. FINAL EXCAVATION LIMIT

Following confirmation of the final excavation limits passing sidewall and base field screening results, soil samples will be obtained from the sidewalls and base of the final excavation limit to determine final Site conditions and to determine baseline concentrations for natural attenuation monitoring. The approximate extent of the expected excavation limits are shown in Figure B-2. Based on the results of previous environmental investigations and experience gained by EPA as part of the 2012 removal action, petroleum hydrocarbon contaminated soil at the Site maybe as shallow as 2 feet bgs and could extend as deep as approximately 20 feet bgs.

3.1.2. Imported Fill Material

The source material for imported fill is a sampling area. Representative soil samples of the source material for imported fill soil will be collected and submitted to a chemical analytical laboratory to

determine if the source material meets the chemical analytical criteria for use at the Site (Table B-3).

The imported fill material used for backfill is also a sampling area and will be tested to confirm adequate compaction following placement. Representative samples will be obtained from the source material and submitted for laboratory analysis to determine the materials maximum dry density.

3.1.3. Surface Water

Surface water upstream and downstream of the Site on the St. Joe River are sampling areas. Surface water monitoring will be conducted at locations upstream and downstream of the removal action area to determine if Site activities are adversely affecting surface water quality in the St. Joe River.

Commented [SH2]: The location of this upstream monitoring location is close to the Bentic/Potlatch property boundary. Will they be using any of the Bentic property for support/staging? If so, they should move upstream of any site activities.

3.1.4. Water Treatment System

The influent and effluent locations of the onsite water treatment system are sampling locations. Influent and effluent water samples will be collected for chemical analysis during system startup and operation to evaluate the performance of the treatment system and ensure that contaminants of concern are not being discharged to the St. Joe River exceeding discharge limits (Table B-2).

Commented [SH3]: Table B-2 includes some compounds that we didn't use:
-- mercury
-- TPH (DRO and heavy oil).
-- benzo(k)fluoranthene.

Water collected from between the primary and secondary GAC vessels in the water treatment system is a sampling location. These samples will be collected during normal operation to evaluate potential contaminant breakthrough.

Commented [SH4]: They should check the discharge criteria for chrysene. It should be 0.0038 ug/L (or lowest reporting limit), not 1.2.

3.1.5. Air

Air at the Site and in the nearby vicinity of the Site is a sampling area. Air monitoring for particulate matter will be conducted at locations upwind and downwind using field instruments to determine if Site activities are generating particulate concentrations that exceed action levels (Table B-1) at the project boundary.

3.1.6. Groundwater

Groundwater at the Site is a sampling area. New groundwater wells will be installed following removal action and groundwater samples will be obtained following completion of the removal action to monitor natural attenuation of Site contaminants. Sampling locations, frequency and duration will be determined following completion of the removal action in consultation with EPA.

3.2. Decision Rules

Decision Rules are statements that describe how the decisions will be made and how to address results exceeding action levels established for the project. Decision rules for the removal action are summarized in the following sections.

3.2.1. Soil Excavation

3.2.1.1. OVERBURDEN SOIL

If soil indicates the presence of free-phase petroleum hydrocarbons, oil-staining, sheen exceeding the field screening criteria, or elevated field measured organic vapor during excavation activities,

then the soil will be segregated, stockpiled and treated as contaminated (see Section 3.2.1.2). If soil generated during excavation activities to remove overburden material does not yield field screening evidence of petroleum contamination, then the material will be stockpiled on Site pending reuse as excavation backfill.

Overburden material used for backfill will be placed in the excavations using 24-inch lifts or less and will be compacted with equipment suitable for the soil type. If field density tests of the compacted overburden material used is below the minimum compaction requirements, additional compaction will occur until the density meets the minimum compaction criteria (Table B-1).

3.2.1.2. CONTAMINATED SOIL

If field screening results indicate the presence of petroleum contamination, then material represented by these field screening results will be transferred from the Site to a permitted landfill. Contaminated soil generated within the saturated zone will be stockpiled on Site and allowed to dewater until representative stockpile samples passes the PFLT. If representative samples of the stockpiled contaminated soil fail the PFLT, then the stockpile will be allowed to dewater further until representative stockpile samples passes the PFLT.

If requested by the receiving landfill, representative samples will be obtained for chemical analysis for soil disposal profiling. Sample results will be submitted to the landfill prior to transport to ensure that the material is acceptable for disposal.

If batteries, underground storage tanks (USTs), drums, etc. are encountered during excavation, soil removed from these areas will be segregated and sampled for TCLP and/or PCBs to determine whether the material designates as a dangerous waste. Dangerous waste will be transferred to a landfill permitted to receive such material.

3.2.1.3. FINAL EXCAVATION LIMIT

EPA will determine the final excavation limit. If soil at the estimated excavation limit indicates field screening evidence of petroleum contamination, then excavation activities will continue laterally until field screening evidence of contamination is no longer observed; and vertically until field screening evidence of petroleum contamination is no longer observed or to a maximum depth of approximately two feet below the seasonal low groundwater level of 17 feet bgs.

3.2.2. Imported Fill Material

If representative soil samples of the import fill material source exceed the chemical analytical criteria presented in Table B-3, then the import fill material source will not be used and additional sources of import fill material evaluated.

Import fill material used for backfill will be placed in the excavations using 24-inch lifts or less and will be compacted with equipment suitable for the soil type. If field density tests of the compacted fill material used is below the minimum compaction requirements, additional compaction will occur until the density meets the minimum compaction criteria (Table B-1).

Commented [SH5]: They need to check the referenced method (ASTM D 2942) as it doesn't appear to be correct.

(Note: this mistake originated in our work plan. The correct method should be ASTM D6938, but they should also confirm.)

Commented [SH6]: Depending on what is found, sampling and analysis may not be necessary (i.e., assume asbestos for ACP).

But, in general, there should be a procedure for a sample plan alteration form(s) for any changes made in the field.

Commented [SH7]: We didn't have anything like this (specific limits used as acceptance criteria for backfill).

3.2.3. Surface Water

If downstream surface water quality parameters exceed the action levels presented in Table B-1, additional Best Management Practices (BMPs) will be implanted to correct the action level exceedance or until no additional project activity modification is possible.

3.2.4. Water Treatment System

If effluent water sample results during system startup (before any water is discharged) exceed the surface water discharge criteria presented in Table B-2, then the water represented by this sample will be rerouted through the treatment system and/or the treatment system will be modified to improve efficiency until acceptable water sample results are achieved. If sample results during system startup (before any water is discharged) are below the limits presented in Table B-2, then treatment system will be considered operational and the treated water will be allowed to discharge to the St. Joe River.

If effluent water sample results from the water treatment system during the removal action exceed the surface water discharge criteria presented in Table B-2, then the discharge of treated water to the St. Joe River will be suspended and batched treated water rerouted through the treatment system until acceptable water sample results are achieved. If sample results from the water treatment system during the removal action are below the limits presented in Table B-2, then the water will be allowed to discharge to the St. Joe River.

If water samples from the water treatment system obtained from between the primary and secondary GAC vessels have detections of SVOCs or petroleum hydrocarbons that exceed the surface water discharge criteria presented in Table B-2, the primary GAC vessel will be replaced or GAC will be replaced with new material.

If product is obtained from the water treatment system, the product will be skimmed off, stored on Site in 55-gallon drums, laboratory analysis conducted as required by an appropriate disposal facility and disposed of separately from the treated water.

3.2.5. Air

If the air particulate concentration at the project boundary exceed the action levels presented in Table B-1, additional BMPs will be implanted to control dust (i.e., suspending excavation activities, soil wetting, etc.) until the air monitoring results are below the action levels.

3.2.6. Groundwater

Monitoring wells will be installed and groundwater will be sampled to monitor post-removal action groundwater conditions and natural attenuation of Site contaminants. Sampling locations, frequency and duration will be determined following completion of the removal action in consultation with EPA.

3.3. Information Needed for the Decision Rules

Parameters/analytes for the surface water monitoring, water treatment system monitoring, and air monitoring activities are presented in Table B-1. Water treatment system effluent discharge parameters and limits are presented in Table B-2. Import fill material analytical criteria are

presented in Table B-3. The information needed to apply the decision rules are described in the following sections.

3.3.1. Soil Excavation

3.3.1.1. OVERBURDEN SOIL

- Field screening results for the presence of free-phase petroleum hydrocarbons, oil staining, sheen exceeding field screening criteria, or elevated field measured organic vapor.
- Soil compaction results for backfilled overburden material.

3.3.1.2. CONTAMINATED SOIL

- Results of soil samples of stockpiled contaminated soil analyzed for PFLT.
- If required by the receiving landfill, stockpiled contaminated soil will be sampled for chemical analysis.

3.3.1.3. FINAL EXCAVATION LIMIT

- Field screening results for the presence of free-phase petroleum hydrocarbons, oil staining, sheen exceeding field screening criteria, or elevated field measured organic vapor.
- Soil samples results taken from the final excavation limits submitted for laboratory analysis of TPH, VOCs, SVOCs, PCBs and metals.

Commented [SH8]: We didn't do metals for these samples.

3.3.2. Imported Fill Material

- Soil samples of import fill material for chemical analysis.
- Results of maximum dry density testing for representative soil samples of imported fill material.
- Soil compaction results for backfilled imported fill material.

3.3.3. Surface Water

- Surface water quality parameters at upstream and downstream locations.

3.3.4. Water Treatment System

- Water treatment system influent and effluent sample results for chemical analysis during system startup.
- Water treatment system influent and effluent sample results for chemical analysis during removal action.
- Water treatment system sample results between the primary and secondary GAC vessels for chemical analysis during removal action.
- If required by the receiving facility, product samples will be sampled for chemical analysis.

3.3.5. Air

- Air particulate concentrations at the upwind and downwind project boundary locations.

3.3.6. Groundwater

- Water samples to monitor groundwater conditions and natural attenuation of Site contaminants.

3.4. Sampling and Analysis

Sampling and analysis protocols are described in greater detail in the QAPP. Field procedures including field screening, soil sample collection and field documentation as well as data quality objectives for chemical analysis are presented in the QAPP.

3.4.1. Soil Excavation

3.4.1.1. OVERBURDEN SOIL

The primary method for determining petroleum contaminated soil will be through water sheen testing, although the presence of free-phase petroleum hydrocarbons, oil-staining or elevated field measured organic vapor may also be used depending on field conditions. The procedure for water sheen testing will consist of collecting approximately 50 grams of representative soil at the selected locations within a sheen pan containing water. Samples that exhibits rainbow sheen (definite oil sheen, film or product that displays rainbow) will be considered contaminated. A passing test will be defined as soil that does not exhibit a rainbow sheen. If a rainbow sheen is observed in a sample, or if free-phase petroleum hydrocarbons, oil-staining or elevated field measured organic vapor using a photoionization detector (PID) is noted, then soil represented by this sample will be segregated and stockpiled on Site pending transport to a permitted landfill.

Overburden soil in which the presence of free-phase petroleum hydrocarbons, oil-staining, sheen exceeding field screening criteria, or elevated field measured organic vapor is not observed will be stockpiled on Site for reuse as backfill material.

Overburden soil material will be placed in the excavation using 24-inch lifts or less and will be compacted with equipment suitable for the soil type with the goal of reaching 90 percent of the maximum dry density. Stones will not be allowed to form clusters with voids. When backfill material is too dry for adequate compaction, water shall be added to the extent necessary to achieve compaction.

3.4.1.2. CONTAMINATED SOIL

Soil in which exhibits the presence of free-phase petroleum hydrocarbons, oil-staining, sheen exceeding field screening criteria, or elevated field measured organic vapor will be considered contaminated and will be transferred to a permitted landfill for disposal. Petroleum contaminated soil generated from the saturated zone will be allowed to drain until a representative sample from the pile passes the PFLT.

If requested by the receiving landfill, representative soil samples will be obtained at the frequency determined by the receiving landfill, and submitted to a contracted laboratory with a quick turnaround time for one or more of the following chemical analyses:

- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270/SIM;

- PCBs by EPA Method 8082;
- RCRA metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver by EPA Method 6000/7000 series; and/or
- TCLP by EPA Method 1311.

3.4.1.3. FINAL EXCAVATION LIMIT

Soil samples will be obtained from the base of the final excavation limit on a grid pattern with grid cells measuring approximately 150 feet (along the plume length) by approximately 100 feet (along the plume width). For the excavation sidewalls, one soil sample will be collected approximately every 300 horizontal feet of sidewall at a depth either similar to the documented presence of Site contaminants or at the approximate midpoint between the base of the excavation and the ground surface. The anticipated locations for base and sidewall samples based on the maximum expected limits of excavation are shown on Figure B-2.

Samples will be direct grab samples, or, depending on stability of the excavation and access to the selected sample location, may be collected from the bucket of the backhoe performing the excavation. Samples will be collected at a depth of approximately 2 to 6 inches into the exposed surface and containerized as specified by the laboratory with the sample location, date, time and depth documented. Soil samples will be placed in placed on ice for transport to the analytical laboratory. Soil samples will be submitted to a chemical analytical laboratory for the following chemical analyses:

- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx;
- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270/SIM;
- PCBs by EPA Method 8082; and
- Metals including antimony, arsenic, barium, beryllium, cobalt, Iron, lead, manganese and mercury by EPA Method 6000/7000 series.

3.4.2. Imported Fill Material

Representative soil samples will be obtained from each source that will be used for importing fill material. A representative soil sample will be obtained from the imported fill material source to determine the maximum dry density using a modified proctor test by ASTM method D1557. In addition, a representative soil sample will also be submitted to a chemical analytical laboratory with a quick turnaround time for the following chemical analyses:

- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270/SIM;
- PCBs by EPA Method 8082; and
- RCRA metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver by EPA Method 6000/7000 series.

Commented [SH9]: We didn't do metals for borrow material, but we did do TPH.

Fill material will be placed in the excavation using 24-inch lifts or less and will be compacted with equipment suitable for the soil type. At least one field density test for approximately every three lifts will be taken using ASTM Method D2942-D6938 (nuclear density gauge). Stones will not be allowed to form clusters with voids. When backfill material is too dry for adequate compaction, water shall be added to the extent necessary to achieve 90 percent compaction relative to the maximum density.

3.4.3. Surface water

Field measurements of pH, electric conductivity, turbidity, dissolved oxygen and temperature will be obtained on a weekly basis during excavation and/or active waste water discharge and on a daily basis during shoreline excavation activities. Field parameters will be measured from grab samples collected from the anticipated upstream and downstream sampling locations shown on Figure B-2. A Hanna Instruments multi-parameter meter or similar will be used for documenting pH, electric conductivity, dissolved oxygen and temperature. A Lamotte turbidimeter or similar will be used to document turbidity. Procedures for measuring field parameters will be in general accordance with the manufacturer's instructions.

Commented [SH10]: Recommend daily.

3.4.4. Air

Daily targeted air monitoring samples will be collected at the project boundary during excavation activities for particulate matter at upwind and downwind locations using an AeroTrak Handheld Particle Counter or similar. Procedures for measuring field parameters will be in general accordance with the manufacturer's instructions.

Commented [SH11]: Will a single daily reading be collected, or will the instrument collect periodic readings throughout the day, with data saved with a datalogger?

3.4.5. Excavation Water Treatment and Associated Product

3.4.5.1. STARTUP TESTING

Influent and effluent water samples will be obtained from water treatment system during initial startup. Representative grab samples will be obtained from water entering the treatment system (pre-treatment/influent sample) and from water exiting the treatment system (post-treatment/effluent sample) through inline sampling ports in approximately 10,000 gallons batches until a total of 50,000 gallons of water has been processed. Influent and effluent samples will be submitted to a chemical analytical laboratory with a quick turnaround for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx;
- SVOCs including benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, bis[2-ethylhexyl]phthalate, chrysene, and n-nitrosodiphenylamine by EPA Method 8270/SIM;
- PCBs by EPA Method 8082; and
- Metals including arsenic, cadmium, copper, lead, mercury, thallium, and zinc by EPA Method 200.7/200.8/7470A/7471B.

Commented [SH12]: Again, we didn't do this.

Commented [SH13]: We didn't do this.

Commented [SH14]: We didn't do.

3.4.5.2. OPERATIONAL TESTING

Influent and effluent samples will be obtained on a weekly basis during operation to monitor the discharge concentrations. Grab samples will be collected and submitted to a chemical analytical laboratory with a quick turnaround for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx;
- SVOCs including benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, bis[2-ethylhexyl]phthalate, chrysene, and n-nitrosodiphenylamine by EPA Method 8270/SIM;
- PCBs by EPA Method 8082; and
- Metals including arsenic, cadmium, copper, lead, mercury, thallium, and zinc by EPA Method 200.7/200.8/7470A/7471B.

A water sample will also be obtained on a weekly basis between the primary and secondary GAC vessels during operation to monitor contaminant breakthrough. Grab samples will be collected and submitted to a chemical analytical laboratory with a quick turnaround for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx; and
- SVOCs including benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, bis[2-ethylhexyl]phthalate, chrysene, and n-nitrosodiphenylamine by EPA Method 8270/SIM.

The samples collected between the GAC vessels will only be analyzed for these analytes because it is expected that SVOCs will be the first contaminants to achieve breakthrough, and petroleum hydrocarbons are the primary COC at the Site.

3.4.5.3. PRODUCT SAMPLES

Representative grab sample(s) will be collected from the treated water system recovered product and analyzed for the parameters required by the disposal facility at a chemical analytical laboratory. The actual quantity of samples will be determined based on the volume of product collected and the requirements of the disposal facility.

3.4.6. Groundwater

Following completion of the removal action, an estimated 4 to 5 monitoring wells will be installed in and around the excavation area to evaluate groundwater conditions at the Site. Grab samples will be collected from these wells following completion of the removal action. The frequency of monitoring will be developed in consultation with EPA.

Commented [SH15]: What about any existing monitoring wells that may remain following the removal action?

Collected grab samples will be submitted to a chemical analytical laboratory with a standard turnaround for the following:

- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx;
- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270/SIM;

- PCBs by EPA Method 8082; and
- Metals including antimony, arsenic, barium, beryllium, cobalt, iron, lead, manganese and mercury by EPA Method 6000/7000 series.

4.0 APPLICABILITY OF THE DATA

4.1.1. Definitive Data

Definitive data is analytical data of sufficient quality for final decision-making. The objectives, procedures, organization, and specific quality assurance (QA) and quality control (QC) activities designed to achieve definitive data for the project is presented in the QAPP.

All chemical analytical data provided by fixed laboratories will be considered definitive data for the following:

- Final excavation limit soil samples;
- Stockpile soil samples;
- Imported fill material soil samples;
- Water treatment system influent and effluent water samples;
- Water treatment system water samples between the primary and secondary GAC vessels; and
- Post-removal action groundwater samples.

4.1.2. Screening Data with Definitive Confirmation

Screening data with definitive confirmation is analytical data that may be used to support preliminary or intermediate decision-making until confirmed by definitive data. Screening data with definitive confirmation will not be collected for the removal action.

4.1.3. Screening Data

Screening data is analytical data which has not been confirmed by definitive data. This data can be used for making decisions: 1) in emergencies, 2) for health and safety screening, 3) to supplement other analytical data, 4) to determine where to collect samples, 5) for waste profiling, and 6) for preliminary identification of pollutants. However, this data is not of sufficient quality for final decision making.

All data obtained from field instruments and/or visual observations will be considered screening data. Field instrument will be used for measuring surface water quality parameters, air particulate matter and soil density. Field screening methods, including water sheen screening, visual observations and headspace vapor measurements using a PID will be used to evaluate the presence of petroleum contamination (i.e., free-phase petroleum hydrocarbons, oil-staining, sheen, or field measured organic vapor).

4.2. Special Sampling or Analysis Directions

Special sampling and analysis methods are described in the QAPP.

4.3. Method Requirements

The goal of the analytical methods is to achieve practical quantitation limits (PQLs) lower than the Site screening levels. However, commercially available laboratory analyses may not be able to achieve PQLs for all chemicals that are lower than screening levels. If commercially available laboratory analyses are not be able to achieve a PQL lower than the screening level for a specific chemical, then the PQL will become the screening level.

4.4. Sample Collection Information

Sample collection procedures to be utilized as part of this investigation including field documentation, sample labeling, packaging and shipment, and sampling equipment maintenance, calibration and decontamination are presented in the QAPP.

5.0 ASSESSMENT AND RESPONSE

5.1. Project Discrepancies

Project discrepancies will be noted in field notes. The final report that is prepared will contain the reason for any discrepancies, and an assessment of the extent to which the discrepancies affect the usability of the data. The QAPP contains additional detail regarding documentation of project discrepancies.

6.0 DATA VALIDATION AND USABILITY

Data generated by laboratory analysis will be provided in an electronic data deliverable (EDD) as well as hard copy. The EDD will be used for data tabulation and presentation as well as data review and validation that will be presented in the investigation report. Data validation will be performed as detailed in the QAPP.

7.0 LIMITATIONS

We have prepared this Site Specific Sampling Plan for use by the Potlatch Land and Lumber during the removal action at the Avery Landing Site. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

8.0 REFERENCES

- E & E (Ecology and Environment, Inc.), "Draft Final Engineering Evaluation /Cost Analysis, Avery Landing Site, Avery, Idaho," prepared for the United States Environmental Protection Agency, Region 10, dated December 2010.
- GeoEngineers, Inc., "Draft Removal Action Work Plan, Avery Landing Site, Avery, Idaho." GEI File No. 2315-016-02, Prepared for United States Environmental Protection Agency on Behalf of the Potlatch Land and Lumber, dated March 4, 2013.
- GeoEngineers, Inc., "Supplemental Site Investigation, Avery Landing Site, Avery, Idaho." GEI File No. 2315-016-01, prepared for Potlatch Forest Holdings, Inc., dated November 9, 2011.
- Golder Associates, Inc., (Golder), "Final Engineering Evaluation /Cost Analysis Work Plan for the Avery Landing Site, Avery, Idaho," Prepared for the Potlatch Forest Products Corporation, dated January 23, 2009.
- United States Environmental Protection Agency (EPA), "Guidance for Quality Assurance Project Plans, EPA QA/GR-5" publication EPA/240/R-02/009, dated December 2002.
- United States Environmental Protection Agency (EPA), "Requirements for Quality Assurance Project Plans, EPA QA/RG-5" publication EPA/240/B-01/003, dated March 2001.
- United States Environmental Protection Agency (EPA), Hazardous Waste Test Methods: Method 9095 Paint Filter Test, 2012. http://www.epa.gov/osw/hazard/testmethods/sw846/online/9_series.htm.